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Amendments to the Claims:

A listing of the entire set of pending claims (including amendments to the claims, if any) is submitted herewith per 37 CFR 1.121. This listing of claims will replace all prior versions, and listings, of claims in the application.

Listing of Claims:

1. (Currently amended) A decision feedback equalizer, (DFE) comprising:

an input which receives an input signal comprising, a transmitted symbol stream, noise and multipath interference;

a DFE output which provides a DFE output signal;

a forward filter which filters the input signal;

a decision feedback loop comprising a subtractor, a slicer, and a feedback filter, wherein the subtractor is coupled to both an output of the forward filter and an output of the feedback filter and subtracts the output of the feedback filter from the output of the forward filter to provide the DFE output signal which is applied to an input of the slicer; and

an adaptive filter, coupled to the DFE output, to adaptively filter the DFE output, and whiten an error in the DFE output signal.

2. (Original) The DFE as claimed in claim 1, further including a training device which trains the adaptive filter to minimize the mean squared error in the DFE output.

3. (Currently amended) A device for improving DFE performance of a decision feedback equalizer (DFE), comprising:

an input which receives an output of a DFE;

an adaptive filter having an adaptive filter input and an adaptive filter output, the adaptive filter input coupled to the input; and

an output coupled to the adaptive filter output for supplying an output signal to a DDFSE (delayed decision feedback sequence estimation) trellis decoder, which

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output signal is the DFE output signal with a smaller whiter error than the error in the output of the DFE.

4. (Original) The device as claimed in claim 3, wherein the adaptive filter is adapted to receive a training sequence that adapts filter taps in the adaptive filter such that the adaptive filter acts to whiten the error in the output of the DFE.

5. (Original) The device as claimed in claim 4, wherein the adaptive filter further includes a LMS algorithm which is used to adapt the filter taps.

6. (Currently amended) The device as claimed in claim 5, wherein the adaptive filter <u>further includes a device for comparing a sum of squares of the filter taps to</u>

$$\sum_{i=1}^{L_t} g_i^2 \le P$$

~~further includes a device for comparing~~

~~where g_i is a filter tap and P is~~ a power constraint imposed on the LMS algorithm to limit amplitude of the filter taps.

7. (Currently amended) A method of improving ~~DFE~~ performance <u>of a decision feedback equalizer (DFE)</u>, comprising the steps of:

receiving an output signal from the DFE ~~which~~ <u>that</u> includes $\hat{a}_k + e_k,$ <u>where $\hat{a}_k$ corresponds to output symbols and e_k corresponds to error terms;</u>

adaptively filtering $\hat{a}_k + e_k;$ <u>and</u>

providing the adaptively filtered $\hat{a}_k + e_k$ to a <u>delayed decision feedback sequence estimator (DDFSE).</u>

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8. (Original) A method of decision feedback equalizing, comprising the steps of:

    receiving an input signal comprising a plurality of symbols, noise and multipath;

    forward filtering the received signal using a forward filter having a plurality of taps;

    subtracting from the forward filtered signal a feedback filtered signal to provide a decision feedback output;

    quantizing the decision feedback output to the nearest symbol to provide a quantized output;

    feedback filtering the quantized output to provide the feedback filtered signal; and

    adaptively filtering the decision feedback output.

9. (Currently amended) A ~~DFE~~ decision feedback equalizer (DFE), comprising:

    a forward filter, having an input which receives an input signal and a forward filter output;

    a subtractor having a first and second input, and an output, the first input being coupled to the forward filter output ~~and having a second input and a subtractor output~~;

    a slicer having an input and output, the input coupled to the output of the subtractor ~~and a slicer output~~;

    a feedback filter coupled to the ~~slicer~~ output of the slicer and the second input of the subtractor; and

    an adaptive filter coupled to the output of the subtractor.

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10. (Currently amended) A television receiver, including a ~~DFE~~ decision feedback equalizer (DFE), comprising:

a forward filter, having an input for receiving an input signal and a forward filter output;

a subtractor having a first and second input, and an output, the first input being coupled to the forward filter output ~~and having a second input and a subtractor output~~;

a slicer having an input and output, the input being coupled to the output of the subtractor ~~and a slicer output~~;

a feedback filter coupled to the slicer output and the second input of the subtractor;

an adaptive filter having an adaptive filter input coupled to the output of the subtractor ~~and an adaptive filter output~~; and

a delayed decision feedback sequence estimator (DDFSE) having an input coupled to an output of the adaptive filter.

11. (Currently amended) A device ~~for improving DFE performance,~~ comprising:

a decision feedback equalizer (DFE) that includes ~~means having~~ an input for receiving input symbols and an output for providing a DFE output signal of output symbols corresponding to the input symbols; and

an adaptive filter ~~means~~ that is coupled to the output of the DFE for adaptively filtering the DFE output signal and thereby whitening noise in the DFE output signal.